CLAIMS

What is claimed is:

1. A method of genetic analysis by:
   a. upstream processing a tissue sample;
   b. applying the processed sample on a matrix, including preserving means sorbed to the solid matrix for protecting the genetic material from degradation, to derive genetic material from the sample; and
   c. analyzing the genetic material.

2. The method as set forth in claim 1, wherein the analyzing step further includes phenotyping the processed tissue sample and cells therein.

3. The method as set forth in claim 1, wherein the matrix further comprises:
   a. a weak base;
   b. a chelating agent;
   c. an anionic surfactant or detergent.

4. The method as set forth in claim 1, wherein the upstream processing step further includes dissociating the cells of the tissue sample.

5. A kit for genetic analysis including:

   a. upstream processing means for processing a tissue sample; and
   b. a matrix, including preserving means sorbed to the matrix for protecting the genetic material from degradation, for receiving a processed sample.

6. A method of genetic analysis, wherein the method comprises:
   a. upstream processing of a biological sample;
   b. applying the processed sample to a matrix, including preserving means sorbed to the matrix for protecting the genetic material from degradation, to derive genetic material from the sample; and

c. analyzing the genetic material.

7. A method of genetic analysis, wherein the method comprises:

a. upstream processing of a biological sample to produce a suspension comprising cells comprising genetic material;

b. applying the suspension to a first solid medium;

c. contacting the cells on the first solid medium with a second solid medium comprising a matrix, including preserving means sorbed to the matrix for protecting the genetic material from degradation, to derive genetic material from the sample; and

d. analyzing the genetic material.

8. A method of isolating and analyzing genetic material, wherein the method comprises:

a. obtaining a biological sample;

b. processing the biological sample to obtain one or more cells or virions comprising genetic materal;

c. applying the sample to a solid medium, wherein the solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:

i. a weak base;

ii. a chelating agent; and

iii. an anionic surfactant or detergent;

d. lysing the cell or virion and retaining the genetic material with the solid medium;

e. analyzing the genetic material.

9. The method of claim 8, wherein

a. the biological sample comprises an organ, a tissue, or a multi-cellular organism or colony; and

b. the processing step b further comprises:

i. dissociating cells in the biological sample; and

ii. isolating the cells on a solid medium distinct from the solid medium of step c.

10. The method of claim 8, wherein the genetic material comprises DNA or RNA.

11. A method of detecting and analyzing genetic material from a biological sample, wherein the method comprises:

a. obtaining a biological sample comprising a cellular component having one or more cells comprising genetic material;

b. isolating the cellular component, on a first solid medium, from non-cellular components in the sample;

c. contacting the cellular component with a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:

i. a weak base;

ii. a chelating agent; and

iii. an anionic surfactant or detergent;

d. lysing the one or more cells in the cellular component and retaining the genetic material with the second solid medium; and

e. analyzing the genetic material.

12. The method of claim 11, wherein the biological sample comprises blood, plasma, serum, mucus, urine, saliva, sweat, or semen.

13. The method of claim 11, wherein the biological sample comprises a culture, a fluid sample, water, a food, a beverage, or a non-biological solid.

14. The method of claim 11, wherein the genetic material comprises DNA or RNA.

15. The method of claim 11, wherein the genetic material comprises genomic DNA or mRNA.

16. A method of isolating and analyzing genetic material from a biological sample from a mammal, wherein the method comprises:

a. obtaining a biological sample comprising an organ or a tissue comprising cells comprising genetic material;

b. dissociating the cells to produce a suspension comprising the cells;

c. isolating the cells on a first solid medium;

d. contacting the cells on the first solid medium with a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:

i. a weak base;

ii. a chelating agent; and

iii. an anionic surfactant or detergent;

d. lysing the cells and retaining the genetic material with the second solid medium;

e. analyzing the genetic material.

17. The method of claim 16, wherein the genetic material comprises mammalian DNA or RNA.

18. The method of claim 16, wherein the genetic material comprises DNA or RNA from non-mammalian cells or from viruses.

19. A method of isolating and analyzing genetic material from a non-solid biological sample from a mammal, wherein the method comprises:

a. obtaining a non-solid biological sample comprising a component of interest, wherein the component contains a cell, a virus, or a combination thereof and wherein the cell or the virus comprises genetic material;

b. isolating the component of interest on a first solid medium;

c. contacting the isolated component of interest on the first solid medium with a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:

i. a weak base;

ii. a chelating agent; and

iii. an anionic surfactant or detergent;

d. releasing the genetic material from the component of interest and retaining the genetic material with the second solid medium;

e. analyzing the genetic material.

20. The method of claim 19, wherein the genetic material comprises DNA or RNA.

21. A method of isolating and analyzing genetic material, wherein the method comprises:

a. obtaining a sample;

b. processing the sample to produce a suspension comprising cells or virions comprising genetic material;

c. isolating the cells or virions on a first solid medium;

d. contacting the cells or virions on the first solid medium with a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:

i. a weak base;

ii. a chelating agent; and

iii. an anionic surfactant or detergent;

e. lysing the cells or virions and retaining the genetic material with the second solid medium; and

f. analyzing the genetic material.

22. The method of claim 21, wherein the sample comprises one of the following: an organism, an organ, a tissue, blood, plasma, serum, mucus, urine, saliva, sweat, or semen.

23. The method of claim 21, wherein the sample comprises a culture, a fluid sample, water, a food, a beverage, or a non-biological solid.

24. The method of claim 21, wherein the analysis of genetic material includes genotyping.

25. The method of claim 21, further comprising:

g. detecting contamination of the sample.

26. The method of claim 21, wherein the genetic material comprises DNA or RNA.

27. The method of claim 21, wherein the genetic material comprises genomic DNA or mRNA.

28. A method of isolating and analyzing genetic material from cells or virions, wherein the method comprises:

a. providing a first solid medium comprising cells or virions comprising genetic material;

b. contacting the cells or virions on the first solid medium with a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:

i. a weak base;

ii. a chelating agent; and

iii. an anionic surfactant or detergent;

c. lysing the cells or virions and retaining the genetic material with the second solid medium; and

d. analyzing the genetic material.

29. The method of claim 28, wherein the analysis of genetic material includes genotyping.

30. The method of claim 28, further comprising:

e. detecting contamination of the first solid medium.

31. The method of claim 28, wherein the genetic material comprises DNA or RNA.

32. The method of claim 28, wherein the genetic material comprises genomic DNA or mRNA.

33. A kit for isolating genetic material, wherein the kit comprises:

a. a first solid medium capable of retaining cells or virions;

b. a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:

i. a weak base;

ii. a chelating agent; and

iii. an anionic surfactant or detergent.

34. An apparatus for isolating genetic material, wherein the apparatus comprises:

a. a chamber for containing a fluid including a suspension of cells therein, the chamber comprising:

i. an opening therethrough; and

ii. a first matrix removably disposed over the opening;

b. vacuum means for drawing the fluid from the chamber and through the first matrix and depositing the cells on the matrix;

c. a second matrix comprising preserving means for lysing cells and preserving genetic material sorbed to the matrix by protecting the genetic material from degradation.